Australian Bureau of Statistics

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Summary

About this Release

The use of design information for the efficient design of surveys has been studied extensively. Well-known methods include stratification and probability proportional to size. These methods are designed to select efficient samples when there is one survey characteristic of interest. Cube sampling aims to select efficient samples when there are multiple characteristics of interest and where a set of design variables could be used for improving the efficiency of the sample design. Cube sampling achieves this efficiency by selecting balanced samples on a set of design variables. A balanced design has the property that the Horvitz-Thompson estimators of total for the set of design variables equal their known totals. This paper presents some exploratory work into measuring the variance reductions in population estimates from Australian Bureau of Statistics' household surveys as a result of selecting a balanced sample of primary selection units. The results in this paper suggest that cube sampling has the potential to provide significant cost savings and therefore that further work in this area should be continued. This paper mentions other issues (e.g. variance estimation and rotation control) that would need to be considered before implementing cube sampling in the ABS.